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	Application No.	Applicant(s)	
	10/669,918	SCHULZ ET AL.	
Notice of Allowability	Examiner	Art Unit	
	Rita Leykin	2837	
The MAILING DATE of this communication appeal All claims being allowable, PROSECUTION ON THE MERITS IS herewith (or previously mailed), a Notice of Allowance (PTOL-85 NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT R	(OR REMAINS) CLOSED in this apply or other appropriate communication IGHTS. This application is subject to	plication. If not includ n will be mailed in due	led course. THIS
1. This communication is responsive to			
2. The allowed claim(s) is/are <u>1-18</u> .			
3. \boxtimes The drawings filed on <u>24 September 2003</u> are accepted by	y the Examiner.		
 4. Acknowledgment is made of a claim for foreign priority u a) All b) Some* c) None of the: 1. Certified copies of the priority documents have 2. Certified copies of the priority documents have 3. Copies of the certified copies of the priority documents have International Bureau (PCT Rule 17.2(a)). * Certified copies not received: 	e been received. e been received in Application No		ation from the
Applicant has THREE MONTHS FROM THE "MAILING DATE" noted below. Failure to timely comply will result in ABANDONN THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.		complying with the re	quirements
5. A SUBSTITUTE OATH OR DECLARATION must be subm INFORMAL PATENT APPLICATION (PTO-152) which giv			NOTICE OF
6. CORRECTED DRAWINGS (as "replacement sheets") mure (a) including changes required by the Notice of Draftspers 1) hereto or 2) to Paper No./Mail Date (b) including changes required by the attached Examiner Paper No./Mail Date Identifying indicia such as the application number (see 37 CFR 1 each sheet. Replacement sheet(s) should be labeled as such in the sheet.	son's Patent Drawing Review (PTO s Amendment / Comment or in the C 1.84(c)) should be written on the drawin	Office action of	e back) of
7. DEPOSIT OF and/or INFORMATION about the deposit attached Examiner's comment regarding REQUIREMENT	esit of BIOLOGICAL MATERIAL r FOR THE DEPOSIT OF BIOLOGIC	nust be submitted. AL MATERIAL.	Note the
Attachment(s) 1. ☑ Notice of References Cited (PTO-892) 2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 3. ☐ Information Disclosure Statements (PTO-1449 or PTO/SB/C Paper No./Mail Date	5. Notice of Informal P 6. Interview Summary Paper No./Mail Dat 08), 7. Examiner's Amendr 8. Examiner's Stateme 9. Other	(PTO-413), te nent/Comment ent of Reasons for Allo	·
	PRIMARY EXAM		Y

U.S. Patent and Trademark Office PTOL-37 (Rev. 1-04) Application/Control Number: 10/669,918

Art Unit: 2837

REASONS FOR ALLOWANCE

1. The following is an examiner's statement of reasons for allowance: The prior art made of record in the attached form PTO-892 considered to be pertinent to the submitted application.

Fu US 2004/0007995 teaches a vector control system for permanent magnet motor using open-loop parameter observer.

Wherein the torque parameters are provided from the open loop observer circuit, which is manipulated to produce an AC voltage command to be applied to PM motor.

The vector values such "d" current and "q" current that are responsible for production of magnetic field, magnetic flux and production of torque. The electromagnetic torque is defined via PM flux linkage in synchronous frame and PM flux linkage in stationary frame V/sec. The reference coordinate frames of the system are the stationary reference frame, and synchronous rotating reference frame. Equivalence between these reference frames gives the proper governing equations that are provided in [0030] through [0061]. Wherein values of motor angular velocity, flux linkage in synchronous and stationary frames are used.

In [0063] the open loop observer circuit 22 shown in Fig. 1 takes dc bus voltage, motor phase currents as transformed by the vector rotation translator 28, and the sine and cosine of the measured rotor electrical position as measured by position converter 26 as inputs.

Application/Control Number: 10/669,918

Art Unit: 2837

Based on provided equations the open loop observer estimates the electrical parameters required to properly convert torque commands into machine current commands, preferably the values of magnetic flux linkage and q-axis inductance.

Marcinkiewicz in US# 2002/0149331 teaches a flux feedback controller system provided with a flux observer adapted to produce a signal indicative of flux-causing voltage across the phase winding and based on received flux command as an input to provide a phase coil energization signal as an output. Wherein in [0175] the output of inverse current model 330 is derived from the value of the three observer fluxes and rotor angle.

However, none of the prior art teaches or suggests the claimed combination of:

- A vector cross product calculator that generates an error signal that is proportional to an angular difference between an estimated stator flux and computed stator flux;
- A proportional integral controller that generates an estimated rotor angular position based on that error signal;

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Application/Control Number: 10/669,918

Art Unit: 2837

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rita Leykin whose telephone number is (571)272-2066. The examiner can normally be reached on Monday-Friday 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Martin can be reached on (571)272-2107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

> Rita Leykin **Primary Examiner**

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